

In the Abstract:

~~The invention provides a~~ A method for measuring the velocity of a multiphase fluid flowing in a pipe. The method comprises directing at least two collimated beams of light from an illuminator through the multiphase fluid by ~~means of~~ transparent portions of the pipe~~[[, the]]~~. The at least two collimated beams are spaced apart in a direction of flow of the multiphase fluid by a predetermined distance~~[[;]]~~. The method also includes detecting scattered, deflected and attenuated light with at least two photodetectors to produce at least two signals~~[[,]]~~. ~~[[the]]~~ The at least two photodetectors are associated with the at least two collimated beams~~[[;]]~~. The method also includes calculating a cross-correlation function between the at least two signals to determine a time delay between the signals~~[[;]]~~ and~~[[,]]~~ calculating the average velocity of the multiphase fluid by taking the ratio of the predetermined distance to the time delay.